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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/374,079	08/12/1999	TRACY D. HARMER	TI-27445	3296

23494 7590 08/09/2005

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EXAMINER	
BAKER, STEPHEN M	
ART UNIT	**PAPER NUMBER**
2133	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/374,079	HARMER ET AL.	
	Examiner	Art Unit	
	Stephen M. Baker	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *7-10 and 12* is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,598,549 to Rathunde (hereafter "Rathunde") in view of U.S. Patent No. 5,974,544 to Jeffries et al (hereafter "Jeffries").

Rathunde discloses a computer system with a software RAID driver program (211) executed by a host computer. RAID parity is used to correct errors caused by a failed drive (col. 7, line 64). More specifically, RAID parity bits create an extension of any ECC coding used within each disk drive, essentially forming a product code concatenation with such individual-drive ECC bits. Each disk in Rathunde's RAID hard disk array comprises a "mass data storage device associated with said host computer". As the RAID parity bits are ECC bits, instructions for generating RAID parity from data read from the disk array serve as "ECC instructions (performed) on data read from (a) mass storage device". Rathunde's software RAID driver program (211) processes instructions for generating RAID parity from data read from the disk array (sections 1.4, 1.5, 2.4, 2.5, 3.2, 3.4), and therefor Rathunde's software RAID driver program (211) serves as a logical "device driver comprising software instructions for execution by said CPU for performing at least some ECC instructions on data read from said mass data

storage device", the disk array serving as a logical device consisting of a plurality of physical devices *i.e.* the disk drives.

Regarding claim 1, Rathunde does not mention that each disk drive includes "ECC hardware". Including ECC hardware in disk drives, including disk drives used in a RAID system, was standard practice at the time the invention was made, as evidenced by Jeffries (col. 14, lines 39-44). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to realize Rathunde's disk drives as disk drives with ECC hardware. Such a realization would have been obvious because including ECC hardware in a disk drive, including a disk drive used in a RAID system, was already standard practice, as evidenced by Jeffries.

Regarding claim 3, Rathunde's host computer of course includes a RAM for storing instructions, presumably including the instructions of Rathunde's software RAID driver program (211).

Regarding claim 4, Official Notice is given that a including an ECC encoder in a disk drive, for generating ECC code during a write to the disk, was standard practice at the time the invention was made. The redundancy generated by an ECC encoder is of course "data integrity determination information". It would have been obvious to a person having ordinary skill in the art at the time the invention was made to realize Rathunde's disk drives as disk drives with ECC encoders. Such a realization would have been obvious because including an ECC encoder in a disk drive, for generating ECC during a write to the disk, was already standard practice.

Regarding claims 5 and 6, Rathunde does not mention that each ECC processing in a disk drive generates an "error flag" when an error is detected in data read from the disk. Generating, for use by a RAID data correction process, an "error flag" by ECC processing in a disk drive when an error is detected in data read from the disk was standard practice at the time the invention was made, as evidenced by Jeffries (column 64, line 56, col. 69, line 11). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to realize Rathunde's disk drives as disk drives with ECC processing that generates an "error flag" when an error is detected in data read from the disk. Such a realization would have been obvious because, as evidenced by Jeffries, generating an "error flag" by ECC processing in a disk drive for use by a RAID data correction process when an error is detected in data read from the disk was already standard practice.

Allowable Subject Matter

3. Claims 7-10 and 12 are allowed.

Response to Arguments

4. Applicant's arguments filed 17 May 2005 have been fully considered but they are not persuasive.

It is not clear from applicant's response whether it is the concept of "ECC" that is not understood, or whether there is simply an unwillingness to construct a sentence that is both grammatically correct and accurate. In any event, the examiner most likely

would agree with applicant's observation that "the daemons (sic) 213 is not the driver 211 nor physical driver" although there is of course no relevance to the observation.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Baker whose telephone number is (571) 272-3814. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stephen M. Baker
Primary Examiner
Art Unit 2133

smb